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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/826,715 | 04/16/2004 | Charles A. Miller | P213-US | 2196 |

50905 7590 10/07/2005

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| EXAMINER |
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MOFFAT, JONATHAN

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| ART UNIT | PAPER NUMBER |
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2863

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/826,715

Applicant(s)

MILLER, CHARLES A.

Examiner

Jonathan Moffat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 11-15, 18, 22, 23 and 26-30 is/are rejected.
- 7) ☒ Claim(s) 4-10, 16-17, 19-21, 24-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/16/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Item 906 in Fig 9, items 704 and 708 in Fig 7, items 1054a-c and 1052a-c in Fig 10. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to for the following informalities: On page 9 of the specification there is reference to item 408 in Fig 3. This item does not appear in figure 3. Further, on page 12 there is reference to an item 614 in Fig 6. This item does not appear in the drawings. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 18 is rejected under 35 U.S.C. 102(b) as being anticipated by Hashimoto (US pat 5,811,655).

Hashimoto discloses an apparatus comprising:

1) Drivers for driving test data through said communications channels to terminals of an electronic device under test, and wherein each said communications channel terminates in a probe for contacting one of said terminals of said electronic device (Fig 1 items 60 and 69).

2) A signal generator configured to sweep a calibration signal from an initial frequency through a range of frequencies, wherein said calibration signal is input into said drivers and driven onto said communications channels (Fig 1 item 90).

3) A plurality of envelope detectors each having an input connected to a drive end of one of said communications channels (Fig 1 item 82).

4) A plurality of wave form detectors each connected to an output of one of said envelope detectors, each said wave form detector configured to detect one of a null or a peak (Fig 1 item 82).

Claims 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerrish (US pat 6449568).

With respect to claim 26, Gerrish discloses a method comprising:

1) Determining a first frequency of a calibration signal driven onto a proximal end of a transmission line while said transmission line is terminated in a known impedance that causes a particular condition in a varying standing wave on said transmission line (column 3 lines 32-40).

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2) Determining a second frequency of said calibration signal while said transmission line is terminated in an unknown impedance that causes said particular condition on said transmission line (column 3 lines 45-49).

3) Calculating a value of said unknown impedance (column 3 line 49 and column 2 line 58-63).

With respect to claim 27, Gerrish discloses that the known impedance is one of an open or a short (column 3 lines 35-38).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obara (US pat 4,814,689) in view of Ito (US pat 5,884,236).

With respect to claim 1, Obara discloses a method comprising:

1) Varying a frequency of a calibration signal driven into each of said communications channels, said calibration signal inducing a varying standing wave on each said communications channel (column 3 lines 5-10).

2) Detecting a particular condition of said varying standing wave on each said communications channel (column 3 lines 5-10).

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3) Determining from said detected condition of said varying standing wave on each said communications channel a propagation delay through each said communications channel (column 3 lines 15-20).

Obara fails to disclose calibrating the line to correct for the delay.

Ito teaches calibrating said communications channels (column 2 lines 38-43).

It would have been obvious to one of ordinary skill in the art to apply corrections for delays in the system of Obara as does Ito in order to increase processor efficiency (Obara column 1 lines 15-20).

With respect to claim 2, Obara discloses varying frequency through a range of frequencies comprising an initial frequency (column 3 lines 5-10).

Obara fails to disclose that the initial frequency be half or quarter wave with respect to an estimation of the length of the communications channel.

It would have been obvious to begin a frequency sweep test at a quarter or half wave frequency based on the estimated length of the channel. By the applicant's admission this is a well known and common practice in the art for determining reflective characteristics and simplifying calculations and is therefore obvious.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obara and Ito as applied to claim 2 above and further in view of Gerrish.

Obara and Ito fail to disclose terminating the communications channel in one of a shorted or open condition.

Gerrish teaches terminating the communications channel in one of a shorted or open condition (column 3 lines 32-40).

It would have been obvious to one of ordinary skill in the art to provide known conditions for the endpoints of the communications channel, as does Gerrish in the method of Obara and Ito. The behavior and characteristics of transmission lines under ideal open and short-circuit conditions are well known in the art for simplifying calculations.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obara and Ito as applied to claim 2 above and further in view of Hashimoto.

With respect to claim 11, Obara and Ito fail to disclose that said communications channels must specifically connect a tester to an electronics device under test.

Hashimoto teaches that said communications channels communicatively connect a tester to an electronics device under test (column 2 lines 55-59).

It would have been obvious to one of ordinary skill in the art to use the system of Obara and Ito to calibrate an electronics test device as does Hashimoto. This would not require any alterations to hardware or software. Calibration of this sort (as in the probes in an oscilloscope) is common to the art and therefore obvious.

With respect to claim 12, Obara and Ito fail to disclose each said communications channel comprises a probe.

Hashimoto teaches that each said communications channel comprises a probe for contacting a terminal of said electronic device under test (column 2 lines 55-59).

It would have been obvious to one of ordinary skill in the art to use the system of Obara and Ito to calibrate an electronics test device as does Hashimoto. It would further have been obvious that the contact portion of said communications channels to the device under test be

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called probes. This would not require any alterations to hardware or software. Calibration of this sort (as in the probes in an oscilloscope) is common to the art and therefore obvious.

With respect to claim 13, Ito discloses said calibrating step comprises adjusting a variable propagation delay in at least one of said communications channels (column 2 lines 38-43).

Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obara.

With respect to claims 14 and 22, Obara discloses a method and computer program comprising:

1) Driving said calibration signal into a plurality of communications channels (column 3 lines 1-5).

2) Sweeping said calibration signal through a range of frequencies; for each said communications channel, determining a frequency in said range that causes a particular waveform condition to appear on each of said communications channels (column 3 lines 5-10).

3) For each said communications channel, using said frequency to determine a propagation delay through said communications channel (column 3 lines 15-20).

Obara fails to disclose specifically beginning the frequency sweep at a quarter or half wave of an estimated length of the communications channel.

It would have been obvious to begin a frequency sweep test at a quarter or half wave frequency based on the estimated length of the channel. By the applicant's admission this is a well known and common practice in the art for determining reflective characteristics and simplifying calculations and is therefore obvious.

Claims 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obara as applied to claims 14 and 22 above and further in view of Gerrish.

Obara and Ito fail to disclose terminating the communications channel in one of a shorted or open condition.

Gerrish teaches terminating the communications channel in one of a shorted or open condition (column 3 lines 32-40).

It would have been obvious to one of ordinary skill in the art to provide known conditions for the endpoints of the communications channel, as does Gerrish in the method of Obara and Ito. The behavior and characteristics of transmission lines under ideal open and short-circuit conditions are well known in the art for simplifying calculations.

Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerrish as applied to claims 26 and 27 above and further in view of Obara.

With respect to claims 28-30, Gerrish fails to disclose sweeping said frequencies. Gerrish further fails to disclose said first frequency being determined from an estimated quarter or half wave signal.

Obara teaches sweeping a calibration frequency over a range of frequencies (column 3 lines 5-10).

It would have been obvious to one of ordinary skill in the art to sweep through a range of frequencies as does Obara in the method of Gerrish in order to quickly cover possible frequencies of interest and to automate the process of impedance determination.

It further would have been obvious to begin a frequency sweep test at a quarter or half wave frequency based on the estimated length of the channel. By the applicant's admission this is a well known and common practice in the art for determining reflective characteristics and simplifying calculations and is therefore obvious.

Conclusion

Claims 4-10, 16-17, 19-21, 24-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claims 7-10, prior art of reference (Gerrish) was found to teach ending channels under test in a known impedance of either an open or a short circuit. Further, it has been stated as obvious by applicant's own admission to begin a frequency sweep at a quarter or half wave frequency. Prior art of reference has also been found to teach using a key frequency to determine the propagation delay of the channel.

With respect to claim 20, prior art of reference (Hashimoto) was found to teach deskewing.

With respect to claim 21, it has been stated as obvious by applicant's own admission to begin a frequency sweep at a quarter or half wave frequency.

Prior art of reference was not found to teach the inventive method of envelope null/peak detection for determining propagation delay. This is or is in part embodied by claims 4-10, 16-17, 19, and 24-25.

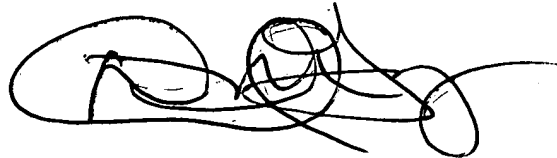
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Moffat whose telephone number is (571) 272-2255. The examiner can normally be reached on Mon-Fri, from 7:15-3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JM

A handwritten signature in black ink, appearing to read 'DMG', with a long horizontal line extending to the right.

DAVID M. GRAY
PRIMARY EXAMINER